

HEALTH EFFECTS OF SMOKE EXPOSURE

Immediate effects of short-term exposure to forest fire smoke include:

- Sore eyes
- Tearing of eyes
- Cough
- Runny nose

Other symptoms often experienced from smoke exposure in combination with physical exhaustion, psychological stress, and poor nutrition include:

- Cold symptoms
- Persistent cough
- Sore throat

Signs of high blood levels of carbon monoxide (CO) include:

- Headaches
- Dizziness
- Nausea
- Decreased mental function

Intermediate effects exposure to forest fire smoke (from days to weeks) include:

- Lung or airway congestion
- Persistent cough

Smoke exposure in combination with physical exhaustion, psychological stress, and poor nutrition can lead to:

- Acute bronchitis

Prolonged exposure. It is very unlikely that you will ever experience this from forest fire smoke and little is known about its effects. The risks are probably the same for cigarette smoking, and include heart disease, stroke, chronic bronchitis and emphysema (COPD), and cancer.

Note: The mixture of particles, liquids, and gaseous compounds found in smoke from wildland fires is very complex, and include compounds that can irritate and even injure the tissues of your mouth, nose, throat, and lungs. During past fires in Florida, an increase in emergency department visits was seen for asthma, acute worsening of chronic bronchitis, eye irritation, chest pains, shortness of breath, and wheezing. (MMWR, 48[04]; February 5, 1999, pages 78-79)

RECOMENDATIONS

1. If you are located in an area where you can smell smoke, or you experience symptoms of cough, eye, nose, mouth, or throat irritation, then move indoors and stay there with the windows closed as long as it is safe to do so.
2. If you continue to smell smoke and experience these symptoms when indoors, then consider evacuating to another location, away from the fire and smoke.
3. If you have asthma, emphysema, chronic bronchitis that do not respond to your regular medications or you have severe symptoms of headache, dizziness, nausea, prolonged cough, sore throat, or shortness-of-breath, visit an urgent care/emergency room or contact your medical provider.
4. Avoid ongoing exposure to smoke—if smoke is causing eye, nose, throat, or lung irritation, remain indoors or leave the area if possible.
5. Listen for public messages of additional precautions that would be announced if conditions change. At most, persons within the area affected by the smoke plume might be advised to evacuate the area.
6. **For more severe shortness of breath, chest pain, decreased mental function or other life-threatening condition, call 911 immediately**

Notes: In a CDC survey of persons exposed to smoke during a fire in California

- Fewer symptoms were reported in persons who ran a Hepa filter in their homes.
- Personal masks were not helpful because smoke particles are too small to be filtered
- Public Service Announcements were successful in encouraging persons to stay indoors.

Like cigarette smoke, forest fire smoke can eventually damage your body's ability to remove large particles from smoke and excess phlegm from your lungs and airway. The health lung has a remarkable ability to recover from the effects of smoke when it is provided time to recover

Here are some of the known components of forest or wildland fire smoke:

- Particulate Matter -- course visible and fine invisible particles, including soot and ash, that can reach deep into your lung and may contain many cancer causing (that is, carcinogenic) compounds.
- Polynuclear aromatic hydrocarbons (PAH) -- one class of organic compounds found on the particulate matter from forest fires, wood-stoves, pine needles, and fireplaces, some of which may be carcinogenic.
- Carbon monoxide (CO) -- a colorless, odorless, toxic gas produced in highest amounts for a few minutes after dousing the fire or in smoldering forest fires.

- Aldehydes -- compounds extremely irritating to the eyes and mucous membranes of the mouth and nose. Some like formaldehyde are carcinogenic, while others like acrolein can injure lung tissue.
- Volatile organic compounds -- strong irritants, some of which are carcinogenic

Note: Smoke from forest fires may have short-term and intermediate health effects. These effects have been shown to be reversible in most cases. The above information and recommendations were developed in large part from “Health Hazards of Smoke: Recommendations of the Consensus Conference, April 1997” of the USDA Forest Service and the World Health Organization’s “Guidelines on Vegetative Fire Emergencies for Public Health Protection” (from W.H.O. website: [**www.who.int/peh**](http://www.who.int/peh))